Klamath Network Featured Creature
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Knobcone Pine
(*Pinus attenuata*)

NATURAL HISTORY:

While lacking the awe-inspiring size and grandeur of coastal redwood and other regional conifers, the humble knobcone pine is a most amazing tree. It exhibits the most remarkable specialization to fire of any conifer in the region.

General Description: By Pacific Northwest standards, Knobcone pine is a small tree, rarely exceeding 1 meter in diameter and 30 m in height. It is also relatively short-lived (100-200 yrs). Its needles are 6-16 cm long and come in bundles of 3. Unlike most pines, it does not shed its lower branches, a trait that helps make it well suited to burning (pyrogenic). The most distinctive feature are the 6-18 cm cones which are strongly reflexed and lie mainly along the main trunk where the inner side is shielded somewhat from the heat of fire.

Fire Ecology: The knobcone is a conifer with cones that remain closed, enveloping the seeds, a fire adaptation known as serotiny. Seeds are released *en masse* in the days and weeks following fire, which melts the resin between scales that holds the cones closed. Conditions of high light and mineral soil left in the wake of fire are optimal for seedling establishment. Knobcone pine is the most serotinous of pines—cones remain closed and seedlings do not normally establish except after fire. The pyrogenicity of the knobcone pine helps ensure that crown fires occur, which not only ensures sufficient heat to open cones, but which also may help eliminate competitors. In essence, this tree has evolved a life-history that depends on periodic self-immolation and rapid recolonization to persist on a site. The location of the cones and the protection they provide the seeds (cones can be heated to 200° C and the seeds still survive) are key features of this life history.

Where to see it in the Klamath Parks: Knobcone pine occurs commonly at Redwood and Whiskeytown, where it is mixed with oaks and chaparral species exhibiting similar fire adaptation. It is also present at Lava Beds and Oregon Caves.

Knobcone pine cone cross-section. Photo by Charles Webber, California Academy of sciences

Knobcone pine following fire with downward pointing cones all open. Photo by Dennis Odion.

Habitat: Knobcone pines occur on relatively infertile sites. They are most common in the Klamath region on exposed ridges where their adaptations in relation to crown fire are a greater advantage.

Distribution: Knobcone pine is found commonly in the coast ranges from southern Oregon to northern baja California and eastward into the southern Cascades and Sierra Nevada. It occurs at low to mid elevations.

Threats: Although well adapted to fire, the knobcone pine is threatened if successive fires occur without a sufficient interlude between them for trees to grow and amass a sizeable population of canopy stored seed. Fire frequency in the southern part of the pine's range has increased due to human ignitions, creating a threat.